Phytotherapy Review & Commentary

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Phytotherapy for Angina

Estimates of the number of people in the United States suffering from angina pectoris vary between around 6 and 16.6 million. Angina is typically a result of coronary artery disease, which remains one of the principal causes of disease worldwide.

Angina pectoris is a manifestation of ischemia of the heart muscle which is usually caused by diseased coronary arteries. The treatment of angina is therefore aimed at treating the underlying ischemia. Ischemia usually occurs during exercise or emotion, when the heart’s demand for oxygen outstrips the supply capability of the diseased and narrowed coronary arteries. This is the usual mechanism behind stable angina.

Stable angina occurs when the frequency, severity, duration, time of appearance and precipitating factors for the angina remain unchanged for 60 days. It is by far the most common form of angina and symptoms typically develop with a defined amount of exercise and abate after a short period of rest. As well as physical activity, stable angina can be precipitated by emotion, eating or cold weather.

Angina can also result from an acute reduction in coronary blood flow and this type of angina can occur at rest. This may result from transient restriction of the flow in the coronary arteries by platelets or a thrombus, or by physiological or pathological vasoconstriction. Vasoconstriction of a normal or minimally diseased coronary artery is referred to as variant or Prinzmetal angina and is now considered to be rare.

Unstable angina describes a spectrum of ischemic events somewhere between stable angina and myocardial infarction (heart attack). An estimated 5% of unstable angina patients die within the first few months of diagnosis.

In my experience, the role of phytotherapy in the management of angina is one that works well when combined with the conventional approaches to this disorder. In particular, herbs that support the functioning of the heart such as hawthorn, Dan Shen and arjun can play a valuable role. These key herbs are briefly reviewed below, followed by a discussion of other aspects of potential support.

Key Herbs

Hawthorn (Crataegus laevigata or C. monogyna)

Traditional Western herbal medicine uses of hawthorn berry include myocardial weakness, hypertension, angina pectoris, tachycardia and other circulatory disorders, such as arteriosclerosis and Buerger’s disease. More recently, particularly in Europe, there has been a preference to use the flowering tops (often blended with the berries) because of the higher levels of possible active components that they contain (OPC’s and flavonoids).

Modern use of hawthorn in clinical trials has focussed on assessing its value in mild cases of congestive heart failure. A meta-analysis reviewing eight clinical trials from 1989 to 1994 found standardized hawthorn leaf and flower extract to be efficacious for treating heart failure (mostly of NYHA stage II). A significant effect was observed for subjective findings in all but one trial, for pressure-rate product (which measures cardiac work performance) in four trials and for work tolerance in three trials. Two trials were open, five were randomized, double-blind and placebo-controlled and one was a multicenter, double-blind, comparative trial with the drug captopril. Information available indicates that for four trials, a dose range equivalent to 0.9 to 2.7 g per day of dried leaf and flower standardized to 6.6 to 19.8 mg per day of flavonoids was administered. In two trials a dose range equivalent to 0.8 to 1.2 g per day of dried leaf and flower standardized to 30 to 45 mg per day of OPC was administered. The randomized, double-blind, placebo-controlled trial that failed to find significant improvement for pressure-rate product had used a lower dose of hawthorn extract (equivalent to 0.9 g/day of leaf and flower containing 6.6 mg/day of flavonoids).

There has not yet been a clinical trial involving hawthorn which has specifically looked at relief of angina as a primary outcome. However both pharmacological studies and some clinical trials are suggestive of its value.

For example, administration of hawthorn to volunteers improved the anoxic symptoms produced by inhalation of an 8% oxygen gas mixture. In patients with ischemic heart disease, hawthorn decreased the signs of ischemia as assessed by an exercise ECG test.

A related species of Crataegus has been successfully trialled for angina in China in an open study. Also the many successful trials on congestive heart failure suggest a beneficial effect on myocardial metabolism.

Arjun (Terminalia arjuna)

Many Terminalias are used in Ayurvedic medicine. However T. arjuna has been prized as a treatment for heart disorders for over 3000 years. It is a tropical woody tree found throughout India near rivers and streams which grows up to 30 metres. In early studies arjun was found effective in alleviating anginal pain in 30 patients, especially in cases with ectopic beats. It also improved risk factors such as hypertension.

Another open study of the effects of arjun in angina patients found a 50% decrease in angina episodes (p<0.01) in 15 patients with stable angina pectoris. Other symptoms of angina improved, including lowered systolic blood pressure and a

Correction Notice

We apologize for omitting the guest author’s name from Phytotherapy Review & Commentary column, in the July issue. Ms. Angela Hywood’s bio can be found at the end of that article.
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delayed time to onset of angina. Patients with unstable angina did not show significant improvement.15

More recently, value has been demonstrated in stable angina in a controlled clinical trial. Fifty-eight males with chronic stable angina with evidence of provokable ischemia on treadmill exercise test received arjun (500 mg every 8 h), isosorbide mononitrate (40 mg/daily) or a matching placebo for one week each, separated by a wash-out period of at least three days in a randomized, double-blind, crossover design.14 They underwent clinical, biochemical and treadmill exercise evaluation at the end of each therapy which were compared during the three therapy periods. Arjun therapy was associated with significant decrease in the frequency of angina and need for isosorbide dinitrate (5.69 ± 6.91 mg/week v. 18.22 ± 9.29 mg/week during placebo therapy, p<0.005). The treadmill exercise test parameters improved significantly during therapy with arjun compared to those with placebo. The total duration of exercise increased (6.14 ± 2.51 min v. 4.76 ± 2.38 min, p<0.005), maximal ST depression during the longest equivalent stages of submaximal exercise decreased (1.41 ± 0.55 mm v. 2.21 ± 0.56 mm, p<0.005), and time to recovery decreased (6.49 ± 2.37 min v. 9.27 ± 3.39 min, p<0.005) during arjun therapy. Similar improvements in clinical and treadmill exercise test parameters were observed with isosorbide mononitrate compared to placebo therapy. No significant differences were observed in clinical or treadmill exercise test parameters when arjun and isosorbide mononitrate therapies were compared with each other and no significant untoward effects were reported during arjun therapy.

This controlled trial followed a recent successful open comparative trial in 10 patients treated with arjun.15 The arjun treatment effected some symptomatic relief in 80% of patients, compared to 70% for the drug isosorbide mononitrate.

Dan Shen (Salvia miltiorrhiza)

Dan Shen is the main herb for heart conditions from Traditional Chinese Medicine. More than 300 heart patients were treated with oral doses of Dan Shen in an open study. Angina was improved in 81% and abnormal ECG improved in 57%.16 Dan Shen injection is used to treat acute heart attacks in Chinese hospitals. The mortality rate fell from 39% to 13%. Early application within 24 hours of the attack was necessary.17

Dan Shen is part of a formula which has been used in other Chinese hospitals to significantly lower mortality from heart attacks.18 The effect of nitroglycerin and Dan Shen were compared in 20 patients with ischaemic heart disease. Dan Shen was markedly superior to nitroglycerin, with more persistent effects and also improved cardiac function.19

A recent review on Dan Shen observed the following: “The demonstration of beneficial effects of Salvia miltiorrhiza (Dan Shen) on ischaemic diseases has revolutionized the management of angina pectoris, myocardial infarction (MI) or stroke in Chinese society. Experimental studies have shown that Dan Shen dilated coronary arteries, increased coronary blood flow, and scavenged free radicals in ischaemic diseases, so that it reduced the cellular damage from ischemia and improved heart functions. Clinical trials also indicated that Dan Shen was an effective medicine for angina pectoris, MI, and stroke.”20

Secondary Herbs

Pushkarmool (Inula racemosa)

Inula racemosa prevented ECG signs of ischemia after exercise in patients with ischemic heart disease. Results were comparable to or greater than glyceryl trinitrate and more long-lived. Follow-up pharmacological studies suggested a beta-blocking type of action.21

A combination of Inula racemosa and Connemella mukul has been extensively studied in ischemic heart disease. The dose was 6 g/day over 4 months in 50 patients. Precedordial pain, dyspnea and discomfort were controlled or improved in 90% of patients and cholesterol decreased by 17%. Objective ECG analysis showed marked improvement in 30% of cases (many patients had irreversible changes due to ischemic damage).22

Inula racemosa was found to possess significant antiangiogenic activity in an open clinical study on 30 patients with angina pectoria. It lowered diastolic blood pressure, plasma cortisol and catecholamines.23

Although generally regarded as an immune herb in the West, one of the principal uses of Astragalus in the Chinese system is as a cardiovascular herb. The action on left ventricular function of Astragalus, in 20 patients with angina pectoris was studied by means of Doppler Echocardiogram (DEC). It showed that cardiac output increased from 5.09 ± 0.21 to 5.96 ± 0.18 L/min 2 weeks after Astragalus was administered (P<0.01), and no improvement of left ventricular diastolic function appeared. Adenosine triphosphate activity was not inhibited by using Astragalus, which was different from that of digitalis.24

A clinical study evaluated the efficacy of a formulation containing Ginseng, Astragalus and Angelica sinensis given by injection.25 The frequency and severity of angina episodes were reduced, tolerance to treadmill exercise was increased and left ventricular function was strengthened.

Trubulus (Trubulus terrestris)

An open clinical study investigated the value of the saponin fraction isolated from Tribulus in 406 cases of angina.26 An efficacy rate of greater than 80% was observed after Tribulus therapy, while objective ECG improvement was recorded in 52.7% of patients.

Risk Factors

Patients with stable or unstable angina are at risk of a heart attack. Hence all the treatable risk factors for myocardial infarction should be addressed. These include smoking, hypertension, obesity, diabetes, lack of regular exercise and a high plasma cholesterol and low high-density lipoprotein cholesterol as well as more recently identified factors such as high homocysteine levels and C-reactive protein (which is an indicator of inflammation).27

Herbal Strategy

• Treatment should be centered on the key and secondary herbs mentioned above, depending on what is available.

• Antiplatelet herbs such as Coleus, Allium sativum (garlic), Zingiber (ginger) and Curcuma longa (turmeric) may have value even if the patient is taking aspirin because of their differing mechanisms. (They do not appear to decrease prostacyclin production.) They also have other properties which may be beneficial, e.g. Coleus is a vasodilator and turmeric is an antioxidant and garlic boosts fibrinolytic activity. However, care should be taken to ensure that bleeding time is not excessively prolonged.

• Capsicum spp. (cayenne) has fibrinolytic activity and was traditionally used to improve myocardial blood supply.

• Other vasodilating herbs which are traditionally prescribed for angina include Tilia species (lime flowers) and Viburnum opulus (cramp bark).

• For angina exacerbated by stress and anxiety, Valeriana officinalis (valerian) and Corydalis ambigua (Corydalis) or similar calming herbs can be prescribed.
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**Example Treatment**

An example formula for stable angina is provided below:

- **Crataegus (berries)** 1:2 40 mL
- **Astragalus membranaceus** 1:2 30 mL
- **Salvia miltiorrhiza** 1:2 30 mL

Dose: 5 mL with water three times daily Allicin-releasing garlic tablets (equivalent to 5g of fresh garlic), 1 to 2 per day

- For unstable angina include additional vasodilator and antiplatelet herbs in the treatment regime. For variant angina combine the vasodilating herbs mentioned above with hawthorn. Also consider valerian and other anxiolytic herbs.

**References**

12. Dwivedi, S et al. *Indian Drugs* 1987; 24: 376
18. Guo S K et al. *Plant Medico* 1983; 4: 63

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